

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
6 November 2003 (06.11.2003)

PCT

(10) International Publication Number
WO 03/090561 A1

(51) International Patent Classification⁷: **A23L 1/31**, C02F 1/68

(74) Agents: **FERBER, Donna, M. et al.**; Greenlee, Winner and Sullivan, P.C., Suite 201, 5370 Manhattan Circle, Boulder, CO 80303 (US).

(21) International Application Number: **PCT/US03/12760**

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date: 23 April 2003 (23.04.2003)

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(25) Filing Language: English

(26) Publication Language: English

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(71) Applicants (for all designated States except US): **PUR-DUE RESEARCH FOUNDATION** [US/US]; 1291 Cumberland Avenue, West Lafayette, IN 47906 (US). **AGRI PROCESSING SERVICES, LLC** [US/US]; 1436 E. Beacon Way, Caramel, IN 46032-5051 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **HARMON, Bud, G.** [US/US]; 1 Castellan Drive, Lafayette, IN 47905 (US). **ORTMAN, Timothy, M.** [US/US]; 1436 East Beacon Way, Caramel, IN 46032-5052 (US).



WO 03/090561 A1

(54) Title: REDUCTION IN BIOLOGICAL OXYGEN DEMAND LEVELS IN WASTE WATER EFFLUENTS

(57) **Abstract:** The aeration process of the present invention reduces the biological oxygen demand of aqueous waste streams including those from animal meat processing facilities, vegetable or fruit processing facilities, fermentation processes and certain organic chemical processes. Magnesium chloride is used at a concentration of from about 0.02% to about 3.0% (w/v) and all ranges and concentrations therebetween, desirably from about 0.02% to about 0.5% (w/v), and aeration is carried out at a rate sufficient to maintain a dissolved oxygen level of from about 1 to about 8 ppm for to about seven days, usually one to seven days. Desirably, especially for animal meat processing waste streams, a dissolved air flocculation step precedes the aeration for (further) reduction of biological demand, and preferably the dissolved air flocculation step is carried out with a magnesium salt.